Notice No.6

Rules and Regulations for the Classification of Ships, July 2020

The status of this Rule set is amended as shown and is now to be read in conjunction with this and prior Notices. Any corrigenda included in the Notice are effective immediately.

Please note that corrigenda amends to paragraphs, Tables and Figures are not shown in their entirety.

Issue date: June 2021

Amendments to	Effective date	IACS/IMO implementation (if applicable)
Part 5, Chapter 1, Section 5	1 July 2021	1 July 2021
Part 5, Chapter 6, Section 3	1 July 2021	1 July 2021
Part 5, Chapter 9, Section 5	1 July 2021	1 July 2021
Part 5, Chapter 12, Section 5	1 July 2021	1 July 2021
Part 5, Chapter 13, Section 3	1 July 2021	N/A
Part 5, Chapter 15, Sections 1, 3 & 4	1 July 2021	1 July 2021
Part 5, Chapter 16, Section 3	1 July 2021	1 July 2021
Part 5, Chapter 19, Sections 1 & 2	1 July 2021	1 July 2021
Part 5, Chapter 20, Sections 1 & 2	1 July 2021	1 July 2021
Part 6, Chapter 2, Section 9 & 11	1 July 2021	1 July 2021
Part 6, Chapter 2, Section 10	1 July 2021	N/A
Part 7, Chapter 3, Sections 1 & 2	1 July 2021	N/A
Part 7, Chapter 5, Section 2	1 July 2021	1 July 2021
Part 7, Chapter 16, Sections 1, 2, 3 & 4	1 July 2021	1 July 2021

Part 5, Chapter 1
General Requirements for the Design and Construction of Machinery

■ *Section 5*
Trials

5.2 Sea trials

(Part only shown)

5.2.7 The following information is to be available on board for the use of the master and designated personnel:

- For ships having multiple propellers or multiple steering-propulsion arrangements, the results of trials to determine the ability to navigate and manoeuvre with one or more propellers or steering-propulsion units inoperative.

Part 5, Chapter 6
Main Propulsion Shafting

■ *Section 3*
Design

3.12 Sternbushes and sterntube arrangements

3.12.1 Where the sterntube or sternbushes are to be installed using a resin of an approved type, the following requirements are to be met:

(a) Pouring and venting holes are to be provided at opposite ends with the vent hole at the highest point.

(b) The minimum radial gap occupied by the resin is to be not less than 6 mm at any one point with a nominal resin thickness of 12 mm.

(c) In the case of oil lubricated sterntube bearings, the arrangement of the oil grooves is to be such as to promote a positive circulation of oil in the bearing.

(d) Provision is to be made for the remote measurement of the temperature at the aft end of the aft bearing, with indication and alarms at the control stations.

~~3.12.1~~ 3.12.2 The length of the bearing in the sternbush next to and supporting the propeller is to be as follows:

(a) For water lubricated bearings which are lined with lignum vitae, rubber composition or staves of ~~approved plastics~~ synthetic material, the length is to be not less than ~~four~~ 4,0 times the rule diameter ~~required for~~ of the ~~screw~~shaft ~~under~~ in way of the ~~liner~~ bearing.

(b) For water lubricated bearings lined with two or more circumferentially spaced sectors of ~~an approved plastics~~ synthetic material, in which it can be shown that the sectors operate on hydrodynamic principles, the length of the bearing is to be such that the nominal bearing pressure will not exceed 0,55 MPa. The length of the bearing is to be not less than ~~twice its~~ 2,0 times the rule diameter of the shaft in way of the bearing.

(c) For oil lubricated bearings of synthetic material the flow of lubricant is to be such that overheating, under normal operating conditions, cannot occur. The acceptable nominal bearing pressure will be considered upon application and is to be supported by the results of an agreed test programme. ~~In general, the~~ The length of the bearing is ~~not~~, in general, to be not less than 2,0 times the rule diameter of the shaft in way of the bearing. The nominal bearing pressure is not to exceed the maximum for which the synthetic material has been approved.

(d) For bearings which are white-metal lined, oil lubricated and provided with an approved type of oil sealing gland, the length of the bearing is to be approximately ~~twice~~ 2,0 times the rule diameter ~~required for the screwshaft~~ of the shaft in way of the bearing and is to be such that the nominal bearing pressure will not exceed 0,8 MPa. The length of the bearing is to be not less than 1,5 times its diameter.

(e) For bearings of cast iron and bronze which are oil lubricated and fitted with an approved oil sealing gland, the length of the bearing is, in general, to be not less than ~~four~~ 4,0 times the rule diameter ~~required for the screwshaft~~ of the shaft in way of the bearing.

(f) For bearings which are grease lubricated, the length of the bearing is to be not less than ~~four~~ 4,0 times the rule diameter ~~required for the screwshaft~~ of the shaft in way of the bearing. Other lengths may be considered upon application, subject to the provision of suitable supporting in-service or testing evidence at relevant shaft pressures and velocities.

~~3.12.2~~ 3.12.3 Forced water lubrication is to be provided for all bearings lined with rubber or ~~plastics~~ synthetic material and for those bearings lined with lignum vitae where the shaft diameter is 380 mm or over. The supply of water may come from a circulating pump or other pressure source. Flow indicators are to be provided for the water service to ~~plastics and rubber~~ the bearings. The water grooves in the bearings are to be of ample section and of a shape which will be little affected by weardown, particularly for bearings of ~~the plastics type~~ synthetic material.

Existing paragraph 3.12.3 has been renumbered 3.12.4.

~~3.12.4~~ 3.12.5 Synthetic materials for application as ~~water lubricated~~ stern tube bearings are to be approved in accordance with *Rules for the Manufacture, Testing and Certification of Materials*, *Ch 14, 2.13 Sterntube bearings ~~2.13.1~~*.

Existing paragraphs 3.12.5 to 3.12.8 have been renumbered 3.12.6 to 3.12.9.

Existing paragraph 3.12.9 has been renumbered 3.12.10.

3.12.11 For oil lubricated bearings of synthetic material, the flow of lubricant is to be such that overheating, under normal operating conditions, cannot occur.

Existing paragraphs 3.12.10 to 3.12.13 have been renumbered 3.12.to 3.12.15.

Part 5, Chapter 9
Podded Propulsion Units

■ *Section 5*
Machinery design and construction requirements

5.6 Steering system

5.6.4 The main steering gear is to be:
(a) Of adequate strength and capable of changing direction of the podded propulsion unit from one side to the other in accordance with the declared steering angle limits at an average ~~rotational~~ turning speed of not less than 2,3 deg/s with the ship running ahead at maximum ahead service speed which shall be demonstrated in accordance with *Pt 5, Ch 9, 8 Testing and trials*; and
(b) Operated by power; and
(c) So designed that they will not be damaged at maximum astern speed; this design requirement need not be proved by trials at maximum astern speed and declared steering angle limits.

(Part only shown)
5.6.5 The auxiliary steering gear is to be:
(b) Of adequate strength and capable of changing the direction of the ship's podded propulsion unit from one side to the other in accordance with the declared steering angle limits at an average ~~rotational~~ turning speed of not less than 0,5 deg/s, with the ship running ahead at one half of the maximum ahead service speed or 7 knots, whichever is the greater; and

5.6.6 In addition to the requirements in *Pt 5, Ch 9, 2.1 Pod arrangement 2.1.1*, for ships fitted with a single steerable podded propulsion unit, where the main steering gear comprises two or more identical power units and two or more identical steering actuators, auxiliary steering gear need not be fitted provided that the steering gear:
(a) In passenger ships is capable of satisfying the requirements in *Pt 5, Ch 9, 5.6 Steering system 5.6.4 (a)* while any one of the power units is out of operation;
(b) In cargo ships is capable of satisfying the requirements in *Pt 5, Ch 9, 5.6 Steering system 5.6.4 (a)* while operating with all power units; and
(c) Is arranged so that after a single failure in its piping system or in one of the power units, steering capability can be maintained or speedily regained.

Existing paragraph 5.6.6 has been renumbered 5.6.7 and amended as below;

5.6.7 For ships fitted with more than one steerable podded propulsion unit, where each main steering system comprises two or more identical steering actuating systems, auxiliary steering gear need not be fitted provided that each steering gear:
(a) In passenger ships is capable of satisfying the requirements in *Pt 5, Ch 9, 5.6 Steering system 5.6.4 (a)* while any one of the power units is out of operation;
(b) In cargo ships is capable of satisfying the requirements in *Pt 5, Ch 9, 5.6 Steering system 5.6.4 (a)* while operating with all power units; and
(c) Is arranged so that after a single failure in its piping or in one of the steering actuating systems, steering capability can be maintained or speedily regained (e.g. by the possibility of positioning the failed steering system in a neutral position in an emergency, if needed). Consideration will be given to alternative arrangements providing equivalence can be demonstrated.
The above capacity requirements apply regardless of whether the steering systems are arranged with shared or dedicated power units.

~~5.6.7~~ 5.6.8 The steering gear for podded units used for dynamic positioning applications with an associated class notation, is to be capable of a ~~rotational~~ turning speed of not less than 9 deg/s.

Existing paragraphs 5.6.8 to 5.6.11 have been renumbered 5.6.9 to 5.6.12.

Part 5, Chapter 12
Piping Design Requirements

■ *Section 5*
Plastic pipes

5.5 Additional fire performance criteria applicable to ships

(Part only shown)

Table 12.5.1 Fire endurance requirements

	Location										
	A	B	C	D	E	F	G	H	I	J	K
SEA WATER[1]											
14 Foam system	L1W	L1W	L1W	N/A	N/A	N/A	N/A	N/A	0	L1W	L1W
15 Sprinkler system	L1W	L1W	L3	X	N/A	N/A	N/A	0	0	L3	L3
16 Ballast	L3	L3	L3	L3	X	0[10]	0	0	0	L2W	L2W
17 Cooling water, essential services	L3	L3	N/A	N/A	N/A	N/A	N/A	0	0	N/A	L2W
SANITARY/DRAINS/SCUPPERS											
23 Deck drains (internal)	L1W[4]	L1W[4]	N/A	~~L1~~[4] L1W	0	N/A	0	0	0	0	0
MISCELLANEOUS											
31 Auxiliary low pressure steam (≤0,7 MPa	L2W	L2W	0[9]	0[9]	0[9]	0	0	0	0	0[9]	0[9]
NEW SERVICES											
32 Central vacuum cleaners	N/A	N/A	N/A	0	N/A	N/A	N/A	N/A	0	0	0
33 Exhaust gas cleaning system effluent line	L3[1]	L3[1]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	L3[1,11]/ N/A	N/A
34 Urea transfer/supply system (SCR installations)	L1[12]	L1[12]	N/A	N/A	N/A	N/A	N/A	N/A	0	L3[1,11]/ N/A	N/A

ABBREVIATIONS

L1	~~Fire endurance test in dry conditions, 60 minutes, *IMO Resolution A.753(18) – Guidelines for the Application of Plastic Pipes on Ships - (adopted on 4 November 1993)Amended by Resolution MSC.313(88P (Appendix 2 – Test Method for Fire Endurance Testing of Water-filled Plastic Piping*~~. Level 1. Piping having passed the fire endurance test specified in Appendix 1 of *IMO Resolution A.753(18)*, as amended by *IMO Resolution MSC. 313(88)* and *IMO Resolution MSC.399(95)* for a duration of a minimum of one hour without loss of integrity in the dry condition is considered to meet level 1 fire endurance standard (L1). Level 1W – Piping systems similar to Level 1 systems except these systems do not carry flammable fluid or any gas and a maximum 5% flow loss in the system after exposure is acceptable (L1W).
L2	~~Fire endurance test in dry conditions, 30 minutes, *IMO Resolution A.753(18) – Guidelines for the Application of Plastic Pipes on Ships - (adopted on 4 November 1993)Amended by Resolution MSC.313(88P (Appendix 2 – Test Method for Fire Endurance Testing of Water-filled Plastic Piping.*~~ Level 2. Piping having passed the fire endurance test specified in Appendix 1 of *IMO Resolution A.753(18)*, as amended by *IMO Res. MSC. 313(88) and IMO Res. MSC.399(95)* for a duration of a minimum of 30 minutes in the dry condition is considered to meet level 2 fire endurance standard (L2). Level 2W – Piping systems similar to Level 2 systems except a maximum 5% flow loss in the system after exposure is acceptable (L2W).

Note 4. For drains serving only the space concerned, ‘0’ may replace ~~‘L1’~~ ‘L1W’.

Note 12. Type Approved plastic piping without fire endurance test (0) is acceptable downstream of the tank valve, provided this valve is metal seated and arranged as fail-to-closed or with quick closing from a safe position outside the space in the event of fire.

Note 13. For Passenger Ships subject to SOLAS II-2, Reg.21.4 (Safe return to Port), plastic pipes for services required to remain operative in the part of the ship not affected by the casualty thresholds, such as systems intended to support safe areas, are to be considered essential services. In accordance with MSC Circular MSC.1/Circ.1369, interpretation 12, for Safe Return to Port purposes, plastic piping can be considered to remain operational after a fire casualty if the plastic pipes and fittings have been tested to L1 standard.

Part 5, Chapter 13
Ship Piping Systems

■ *Section 3*
Drainage of compartments, other than machinery spaces

3.4 Ships where hatch covers are omitted

3.4.1 The requirements of this section apply to ships which have been assigned the class notation **Hatch Covers omitted in Hold (No(s) ...)**.

3.4.2 The bilge pumping system is to have a required capacity to pump:

- the maximum hourly rate of green water shipped in seagoing conditions as established by the comprehensive model testing specified, *see Pt 3, Ch 9, 10.2 Loading due to water ingress;*
- an amount equal to rainfall of 100 mm/h regardless of the installation of rain covers;
- the amount of shipped green water measured during the seakeeping model tests, *see Pt 3, Ch 9, 10.2 Loading due to water ingress*, for the dead ship condition in beam seas, multiplied by a safety factor of 2;
- four-thirds of the amount of water required for fire-fighting purposes in the largest hold;
- an amount equal to the capacity required for ships with closed cargo holds, *see Pt 5, Ch 13, 3.2 Cargo holds*;

whichever is the greater.

3.4.3 At least three bilge pumps are to be capable of pumping hold bilges.

3.4.4 At least one of these pumps is to have a capacity of not less than the required capacity as defined in *Pt 5, Ch 13, 3.4 Ships where hatch covers are omitted 3.4.2* and is to be dedicated to bilge and ballast service only. The pump shall be located in such a way that it will not be affected by a fire or other casualty in the space containing the pumps required in *Pt 5, Ch 13, 3.4 Ships where hatch covers are omitted 3.4.5* or the space containing the main source of power and shall be supplied from the emergency switchboard required by *Pt 6, Ch 2, 3 Emergency source of electrical power*.

3.4.5 The combined output of at least two further pumps is not to be less than the required capacity as defined in *Pt 5, Ch 13, 3.4 Ships where hatch covers are omitted 3.4.2*. These pumps are to be supplied from the main source of electrical power required by *Pt 6, Ch 2, 3 Main source of electrical power* or any other source of power independent of the emergency switchboard required by *Pt 6, Ch 2, 3 Emergency source of electrical power*.

3.4.6 The bilge pumping system, including the piping system, is to incorporate sufficient redundancy features such that the system will be fully operational and capable of dewatering the hold spaces at the required capacity, *see Pt 5, Ch 13, 3.4 Ships where hatch covers are omitted 3.4.2* in the event of failure of any one system component.

3.4.7 The bilge pumping system is to be arranged to be effective within the limiting angles of inclination required by *Pt 6, Ch 2, 3 Emergency source* of electrical power, and bilge wells are to be readily accessible for cleaning.

3.4.8 All open cargo holds are to be fitted with high bilge level alarms to alert the ship's crew when there is any accumulation of water.

3.4.9 A separate alarm system is to be installed to alert the ship's crew of water reaching 2/3rd of the maximum level of water ingress in the cargo hold as defined in *Pt 3, Ch 9, 10.2 Loading due to water ingress*.

3.4.10 Risk assessment and remedial actions in the event of the alarm mentioned in *Pt 5, Ch 13, 3.4 Ships where hatch covers are omitted 3.4.8* being sounded are to be included in the ship's safety management system and submitted for review.

3.4.11 If the loss of suction prevents the proper functioning of the bilge system, special measures to prevent this are to be considered, e.g. the installation of level indicators.

3.4.12 Open cargo hold drain wells are to be designed to ensure unobstructed discharge of water and easy access for cleaning under all conditions.

Existing sub-sections 3.4 to 3.7 have been renumbered as 3.5 to 3.8.

Part 5, Chapter 15
Piping Systems for Oil Tankers

■ *Section 1*
General requirements

1.10 Slop tanks

1.10.3 ~~At least two~~ Appropriate numbers and types of portable instruments are to be available on board for gas detection and measurement, *see Pt 5, Ch 15, 4.4 Gas measurement*.

■ *Section 3*
Cargo handling system

3.1 General

3.1.5 ~~At least two~~ Appropriate numbers and types of portable instruments are to be available on board for gas detection and measurement, *see Pt 5, Ch 15, 4.4 Gas measurement*.

■ *Section 4*
Cargo tank venting, purging and gas-freeing

4.4 Gas measurement

4.4.1 All tankers are to be equipped with at least two portable instruments for measuring ~~per cent LEL of~~ flammable vapour (hydrocarbon) concentrations in air (percentage Lower Explosive Limit (% LEL)) and at least two portable oxygen analysers.

4.4.2 ~~All tankers are to be equipped with at least two portable oxygen analysers.~~ As an alternative to *Pt 5, Ch 15, 4.4 Gas measurement 4.4.1*, at least two gas detectors, each capable of measuring both oxygen and flammable vapour concentrations in air (% LEL) may be provided.

4.4.3 For tankers fitted with an inert gas system, at least two portable gas detectors are to be provided which are capable of measuring flammable vapour concentrations in inerted atmospheres ~~are to be provided~~ (percentage gas by volume).

Part 5, Chapter 16
Water Jet Systems

■ *Section 3*
Design requirements

3.7 Nozzle/steering arrangements

3.7.3 The main steering gear is to be:

(a) Of adequate strength and capable of changing direction of the steerable water jet from one side to the other in accordance with the declared steering angle limits at an average ~~rotational~~ turning speed of not less than 2,3 deg/s with the ship running ahead at maximum ahead service speed which shall be demonstrated in accordance with *Pt 5, Ch 19, 7.2 Trials*; and

(b) Operated by power; and

(c) So designed that they will not be damaged at maximum astern speed; this design requirement need not be proved by trials at maximum astern speed and declared steering angle limits.

(Part only shown)

3.7.4 The auxiliary steering gear is to be:

(b) Of adequate strength and capable of changing the direction of the ship's water jet nozzles from one side to the other in accordance with the declared steering angle limits at an average ~~rotational~~ turning speed of not less than 0,5 deg/s, with the ship running ahead at one half of the maximum ahead service speed or 7 knots, whichever is the greater; and

3.7.5 In addition to the requirements in *Pt 5, Ch 16, 2.1 Water jet arrangement 2.1.1*, for ships fitted with a single steerable water jet, where the main steering gear comprises two or more identical power units and two or more identical steering actuators, auxiliary steering gear need not be fitted provided that the steering gear:

(a) In passenger ships is capable of satisfying the requirements in *Pt 5, Ch 16, 3.7 Nozzle/steering arrangements 3.7.3 (a)* while any one of the power units is out of operation;
(b) In cargo ships is capable of satisfying the requirements in *Pt 5, Ch 16, 3.7 Nozzle/steering arrangements 3.7.3 (a)* while operating with all power units; and
(c) Is arranged so that after a single failure in its piping system or in one of the power units', steering capability can be maintained or speedily regained.

Existing paragraph 3.7.5 has been renumbered 3.7.6 and amended as below;'

3.7.6 For ships fitted with more than one steerable water jet, where each main steering system comprises two or more identical steering actuating systems, auxiliary steering gear need not be fitted provided that each steering gear:

(a) In passenger ships is capable of satisfying the requirements in *Pt 5, Ch 16, 3.7 Nozzle/steering arrangements 3.7.3 (a)* while any one of the power units is out of operation;
(b) In cargo ships is capable of satisfying the requirements in *Pt 5, Ch 16, 3.7 Nozzle/steering arrangements 3.7.3 (a)* while operating with all power units; and
(c) Is arranged so that after a single failure in its piping or in one of the steering actuating systems, steering capability can be maintained or speedily regained (e.g. by the possibility of positioning the failed steering system in a neutral position in an emergency, if needed). Consideration will be given to alternative arrangements providing equivalence can be demonstrated.

The above capacity requirements apply regardless of whether the steering systems are arranged with shared or dedicated power units.

Existing paragraphs 3.7.6. to 3.7.9 have been renumbered 3.7.7 to 3.7.10.

Part 5, Chapter 19
Steering Systems

■ *Section 1*
General

1.2 Definitions

1.2.10 **Declared steering angle limits** are the operational limits in terms of maximum steering angle, or equivalent, according to manufacturer's guidelines for safe operation, also taking into account the ~~vessels~~ ship's speed or propeller torque/speed or other limitation. Trials to determine the ship's manoeuvring characteristics are to be carried out with steering angles not exceeding the declared steering angle limits.

■ *Section 2*
Performance

2.1 General

2.1.2 Unless the main steering arrangements for ship directional control comprise two or more identical power units, in accordance with *Pt 5, Ch 19, 2.1 General 2.1.4* or *Pt 5, Ch 19, 8.1 For tankers, chemical tankers, or gas carriers of 10 000 tons gross and upwards and every other ship of 70 000 tons gross and upwards 8.1.1*, every ship is to be provided with main steering arrangements and auxiliary steering arrangements, or two or more identical steering actuating systems, in accordance with the requirements of the Rules. The main and auxiliary steering arrangements are to be so arranged that the failure of one of them will not render the other one inoperative.

Part 5, Chapter 20
Azimuth Thrusters

■ *Section 1*
General requirements

1.1 Application

1.1.2 In general, for a ~~vessel~~ ship to be assigned an unrestricted service notation a minimum of two azimuth thruster units are to be provided where these form the sole means of propulsion. Where a single thruster installation is proposed~~, it will be subject to special consideration~~ as the sole means of propulsion or steering, a detailed engineering and safety justification is to be evaluated by LR. This evaluation process will include a risk assessment analysis using a recognised technique to verify that sufficient levels of redundancy and monitoring are incorporated in the azimuth thruster's essential support systems and operating equipment.

■ *Section 2*
Performance

2.1 General

2.1.4 The main steering gear is to be:

(a) Of adequate strength and capable of changing direction of the azimuth thruster from one side to the other in accordance with the declared steering angle limits at an average ~~rotational~~ turning speed of not less than 2,3 deg/s with the ship running ahead at maximum ahead service speed which shall be demonstrated in accordance with *Pt 5, Ch 9, 8 Testing and trials*; and

(b) Operated by power; and

(c) So designed that they will not be damaged at maximum astern speed; this design requirement need not be proved by trials at maximum astern speed and declared steering angle limits.

(Part only shown)

2.1.5 The auxiliary steering gear is to be:

(b) Of adequate strength and capable of changing the direction of the ship's azimuth thrusters from one side to the other in accordance with the declared steering angle limits at an average ~~rotational~~ turning speed of not less than 0,5 deg/s, with the ship running ahead at one half of the maximum ahead service speed or 7 knots, whichever is the greater; and

2.1.6 In addition to the requirements in *Pt 5, Ch 20, 1.1 Application 1.1.2*, for ships fitted with a single steerable azimuth thruster, where the main steering gear comprises two or more identical power units and two or more identical steering actuators, auxiliary steering gear need not be fitted provided that the steering gear:

(a) In passenger ships is capable of satisfying the requirements in *Pt 5, Ch 20, 2.1 General 2.1.4 (a)* while any one of the power units is out of operation;

(b) In cargo ships is capable of satisfying the requirements in *Pt 5, Ch 20, 2.1 General 2.1.4 (a)* while operating with all power units; and

(c) Is arranged so that after a single failure in its piping system or in one of the power units, steering capability can be maintained or speedily regained.

Existing paragraph 2.1.6 has been renumbered 2.1.7 and amended as below;

2.1.7 For ships fitted with more than one steerable azimuth thruster, where each main steering system comprises two or more identical steering actuating systems, auxiliary steering gear need not be fitted provided that each steering gear:

(a) In passenger ships is capable of satisfying the requirements in *Pt 5, Ch 20, 2.1 General 2.1.4 (a)* while any one of the power units is out of operation;

(b) In cargo ships is capable of satisfying the requirements in *Pt 5, Ch 20, 2.1 General 2.1.4 (a)* while operating with all power units; and

(c) Is arranged so that after a single failure in its piping or in one of the steering actuating systems, steering capability can be maintained or speedily regained (e.g. by the possibility of positioning the failed steering system in a neutral position in an emergency, if needed). Consideration will be given to alternative arrangements providing equivalence can be demonstrated.

The above capacity requirements apply regardless of whether the steering systems are arranged with shared or dedicated power units.

~~2.1.7~~ 2.1.8 The steering gear for azimuth thrusters used for dynamic positioning applications with an associated class notation, is to be capable of a ~~rotational~~ turning speed of not less than 9 deg/s.

Part 6, Chapter 2,
Electrical Engineering

■ *Section 9*
Rotating machines

9.1 General requirements

9.1.26 The entity responsible for assembling the alternating current generating set is to install a rating plate marked with at least the following information:

(a) the generating set manufacturer’s name or mark;
(b) the set serial number;
(c) the set date of manufacture (month/year);
(d) the rated power (both in kW and kVA) with one of the power rating prefixes COP, PRP (or, only for emergency generating sets, LTP) as defined in ISO 8528-1 *Reciprocating internal combustion engine driven alternating current generating sets*;
(e) the rated power factor;
(f) the set rated frequency (Hz);
(g) the set rated voltage (V);
(h) the set rated current (A); and
(i) the mass (kg).

■ *Section 10*
Converter equipment

10.3 Uninterruptible power systems

10.3.14 UPS units utilising lithium battery systems as energy storage devices are to be in accordance with the following sub-Sections of these Rules as applicable and to the recommendations of the battery manufacturer:

- *Pt 6, Ch 2, 1.2 Documentation required for design review*;
- *Pt 6, Ch 2, 12.1 General*;
- *Pt 6, Ch 2, 12.2 Design and construction*;
- *Pt 6, Ch 2, 12.3 Location*;
- *Pt 6, Ch 2, 12.4 Installation*;
- *Pt 6, Ch 2, 12.5 Thermal management and ventilation*; and
- *Pt 6, Ch 2, 21.1 Testing.*

■ *Section 11*
Electric cables, optical fibre cables and busbar trunking systems (busways)

11.11 Penetration of bulkheads and decks by cables

11.11.5 A schedule of watertight cable penetrations is to be prepared by the shipbuilder in either hard copy or digitised media. The schedule is to record for each type of penetration installed the following details:

(a) the marking or identification system used;
(b) the manufacturer’s installation drawings and manual(s);
(c) the Type Approval certification;
(d) the as built condition of the penetration after the final inspection in the shipyard; and
(e) any inspection, modification, repair, and maintenance activities conducted.

Part 7, Chapter 3
Fire Fighting Ships

■ *Section 1*
General

1.5 Definitions

~~1.5.2 'Steel or other equivalent material'. In this context `equivalent material' means any material which, by itself or due to insulation provided, has structural and integrity properties equivalent to steel at the end of the applicable standard fire test exposure period (e.g. aluminium with appropriate insulation).~~

~~1.5.3 'The standard fire test' is one in which specimens of the relevant bulkheads or decks, having a surface area of approximately 4,65 m² and a height of 2,44 m, resembling as closely as possible the intended construction and including, where appropriate, at least one joint, are exposed in a test furnace to heat on a time-temperature relationship, approximately as follows:~~

- ~~At the end of the first 5 minutes, 538°C.~~
- ~~At the end of the first 10 minutes, 704°C.~~
- ~~At the end of the first 30 minutes 843°C.~~
- ~~At the end of the first 60 minutes 927°C.~~

~~1.5.4 A 'non-combustible material' means a material which neither burns nor gives off flammable vapours in sufficient quantity for self-ignition when heated to approximately 750°C. Any other material is a `combustible material'.~~

■ *Section 2*
Construction

2.1 Hull

2.1.1 The ship may be constructed of steel or aluminium.

2.1.2 For ships with the class notation **Fire-fighting ship 1**, proposals to use uninsulated aluminium will be specially considered. Details of the measures taken to prevent the surface temperature of the aluminium being raised to an elevated level are to be submitted for approval. Such arrangements shall include water spray.

Existing paragraph 2.1.1 has been renumbered 2.1.3.

Part 7, Chapter 5
Ships Equipped for Oil Recovery Operations

■ *Section 2*
Oil recovery

2.2 Equipment and deck arrangement

2.2.4 For assignment of the notations **Oil Recovery** or **Oil Recovery Ship**, at least two portable instruments ~~are to be available on board gas detection~~ for measuring flammable vapour concentrations in air (percentage Lower Explosive Limit (% LEL)) are to be available on board.

Part 7, Chapter 16
Towing Winch Emergency Release Systems

■ *Section 1*
Towing winch emergency release systems - goal-based framework

1.1 Goal-based framework

1.1.1 The purpose of this Section is to present a goal-based approach to the requirements for towing winch emergency release systems provided on towing winches that are used for towing ships within close quarters, ports or terminals, including those ships normally not intended for towing operation in the transverse direction.

(Part only shown)
1.1.5 The list of performance requirements is as follows:

b) ~~An alternative~~ Where additional sources of energy ~~is to be~~ are provided ~~and is to be available in dead ship condition,~~ to effect emergency release of the towline in the event of a blackout, they are to be sufficient to allow for at least three attempts to release the towline and/or hold the brake open for sufficient time to release the full length of the towline or five minutes, whichever is lesser.

■ *Section 2*
Towing winch emergency release systems – scope and definitions

2.2 Definitions

2.2.1 **Emergency release system** refers to the mechanism and associated control arrangements that are used to release the load on the towline in a controlled manner under both normal and ~~dead ship~~ blackout conditions.

■ *Section 3*
Emergency release system requirements

3.2 Emergency release system operation

3.2.6 ~~An alternative source of energy is to be provided such that normal operation of the emergency release system can be sustained under dead ship conditions.~~ Emergency release of the towline is to be possible in the event of a blackout. For this purpose, where additional sources of energy are required, such sources are to comply with *Pt 7, Ch 16, 3.2 Emergency release system operation 3.2.7*.

(Part only shown)
3.2.7 The ~~alternative~~ sources of energy required by *Pt 7, Ch 16, 3.2 Emergency release system operation 3.2.6* ~~is~~ are to be sufficient to achieve the most onerous of the following conditions (as applicable):

b) Where the winch design is such that the drum release mechanism requires continuous application of power (e.g. where the brake is applied by spring tension and released using hydraulic or pneumatic power), sufficient power is to be provided to operate the emergency release system (e.g. hold the brake open and allow release of the towline) in ~~a dead ship situation~~ the event of a blackout for a minimum of five minutes. This may be reduced to the time required for the full length of the towline to feed off the winch drum at the load specified in *Pt 7, Ch 16, 3.2 Emergency release system operation 3.2.5* if this is less than five minutes.

3.3 Emergency release control system

3.3.1 Emergency release operation must be possible from the bridge and from the winch control station on deck. The winch control station on deck is to be in a safe location. A position in close proximity to the winch is not regarded as a 'safe location', unless it is documented that the position is, at least, protected against towline break or winch failure.

3.3.2 The emergency release control is to be located ~~in~~ close ~~proximity~~ to ~~the~~ an emergency stop button for winch operation, if provided, and ~~both should~~ shall be clearly identifiable, clearly visible, easily accessible and positioned to allow safe operability.

■ *Section 4*
Validation of requirements for emergency release systems

4.1 Documentation

4.1.3 ~~The method for periodic testing in accordance with manufacturers recommendations of the winch is to be documented, a copy of which is to be kept on board and made available to the Surveyor on request.~~ Instructions for surveys and periodic testing of the emergency release system are to be documented by the manufacturer, agreed with LR and are to be kept on board the ship on which the winch has been installed. The documentation is to be made available to the Surveyor on request.

4.2 Testing and trials

4.2.3 The performance capabilities and operating instructions of the emergency release system are to be included in the manufacturer’s operating manual which is to be made available on board the ship on which the winch has been installed.

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Published by Lloyd’s Register Group Limited
Registered office (Reg. no. 08126909)
71 Fenchurch Street, London, EC3M 4BS
United Kingdom

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